CLAIMS

1. A gas turbine airfoil comprising:

opposite pressure and suction sides joined together at chordally spaced apart leading and trailing edges and extending longitudinally from root to tip;

an outwardly convex nose bridge bridging said pressure and suction sides behind said leading edge, and integrally joined to a complementary thermally insulating shield spaced therefrom to define a bridge channel therebetween;

said shield includes said leading edge and wraps laterally aft around said nose bridge along both said pressure and suction sides; and

a plurality of flow channels disposed behind said nose bridge for cooling said airfoil to said trailing edge.

2. An airfoil according to claim 1 wherein said shield is inwardly concave opposite said outwardly convex nose bridge, and said bridge channel includes a common inlet therebetween and laterally opposite slot outlets along said pressure and suction sides.

3. An airfoil according to claim 2 wherein said nose bridge includes a row of impingement holes directed substantially normal to said shield behind said leading edge for impingement cooling thereof.

4. An airfoil according to claim 3 wherein said shield includes a plurality of rows of film cooling holes along said leading edge for film cooling thereof.

5. An airfoil according to claim 4 further comprising an array of pins integrally joining said shield to said nose bridge, and arranged in a two dimensional mesh in said bridge channel.

6. An airfoil according to claim 5 wherein said pins are arranged in a first mesh along said pressure side from said bridge channel inlet and terminate at a first outlet of said bridge

channel, and in a second mesh along said suction side from said common inlet and terminate at a second outlet of said bridge channel.

7. An airfoil according to claim 6 wherein said bridge channel converges aft between said common inlet and said first and second outlets.

8. An airfoil according to claim 7 further comprising a first inlet channel disposed behind said nose bridge for channeling cooling air thereto for flow in turn through said impingement holes and bridge channel for discharge through both said first and second pin meshes.

9. An airfoil according to claim 8 further comprising second and third inlet channels disposed behind said first inlet channel, and terminating in corresponding arrays of pins arranged in two dimensional third and fourth meshes.

10. An airfoil according to claim 9 wherein:

said third mesh array of pins is disposed on said pressure side spaced from said suction side; and

said fourth mesh array of pins bridges said pressure and suction sides aft of said third mesh and terminate before said trailing edge.

11. A gas turbine airfoil 12 comprising:

opposite pressure and suction sides joined together at chordally spaced apart leading and trailing edges and extending longitudinally from root to tip;

an outwardly convex nose bridge bridging said pressure and suction sides behind said leading edge, and integrally joined to a complementary thermally insulating shield spaced therefrom to define a bridge channel therebetween; and

said shield includes said leading edge and wraps laterally aft around said nose bridge along both said pressure and suction sides.

12. An airfoil according to claim 11 wherein said shield is inwardly concave opposite said

outwardly convex nose bridge, and said bridge channel includes a common inlet therebetween and laterally opposite outlets along said pressure and suction sides.

13. An airfoil according to claim 12 wherein said nose bridge is perforate longitudinally along said bridge channel inlet.

14. An airfoil according to claim 13 wherein said shield is perforate longitudinally along said leading edge.

15. An airfoil according to claim 14 further comprising an array of pins integrally joining said shield to said nose bridge, and arranged in a two dimensional mesh in said bridge channel.

16. An airfoil according to claim 15 wherein said pins are arranged in a first mesh along said pressure side from said bridge channel inlet and terminate at a first outlet of said bridge channel, and in a second mesh along said suction side from said common inlet and terminate at a second outlet of said bridge channel.

17. An airfoil according to claim 16 wherein said bridge channel converges aft between said common inlet and said first and second outlets.

18. An airfoil according to claim 16 wherein:

said nose bridge includes a row of impingement holes directed substantially normal to said shield behind said leading edge for impingement cooling thereof; and

said shield includes a plurality of rows of film cooling holes along said leading edge for film cooling thereof.

19. An airfoil according to claim 18 further comprising an inlet channel disposed behind said nose bridge for channeling cooling air thereto for flow in turn through said impingement holes and bridge channel for discharge through both said first and second pin meshes.

20. An airfoil according to claim 16 further comprising a plurality of flow channels disposed behind said nose bridge for cooling said airfoil to said trailing edge.

21. An airfoil according to claim 20 wherein said flow channels include corresponding second and third inlet channels terminating in corresponding arrays of pins arranged in two dimensional third and fourth meshes.

22. An airfoil according to claim 21 wherein:

said third mesh array of pins is disposed on said pressure side spaced from said suction side; and

said fourth mesh array of pins bridges said pressure and suction sides aft of said third mesh and terminate before said trailing edge.